Jan. 16, 1945. F. C. MILLARD 2,367,233

SIREN

Filed May 14, 1942 2 Sheets-Sheet 1

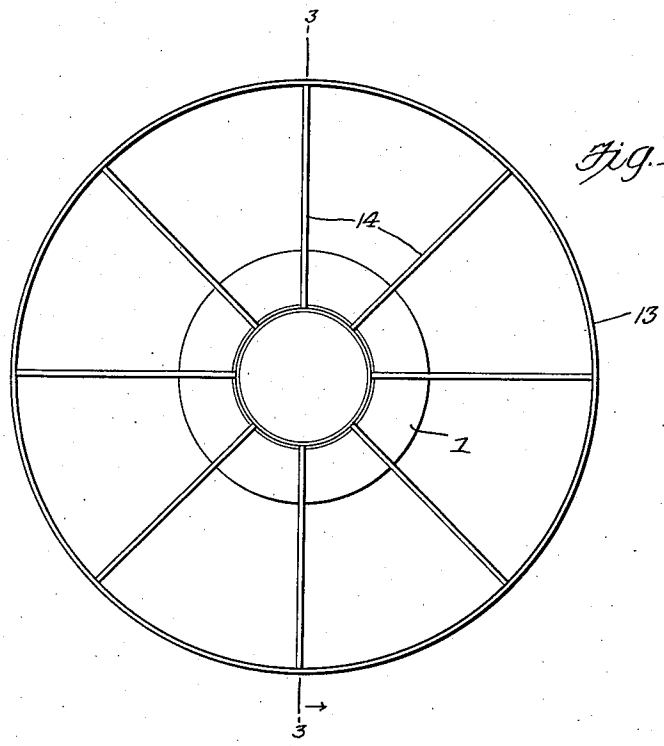



Fig. 1.

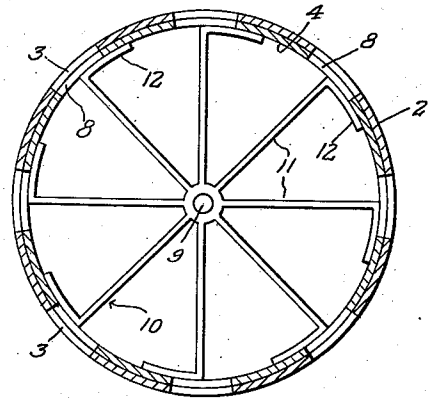



Fig. 5.

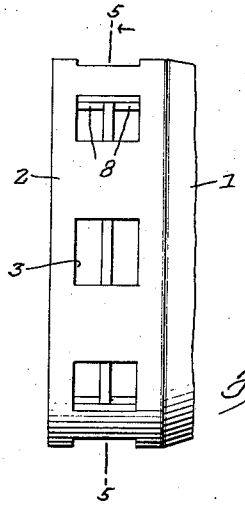



Fig. 4.

Inventor

Frederick C. Millard

By Clarence A. O'Brien

and Harvey B. Jacobson Attorneys

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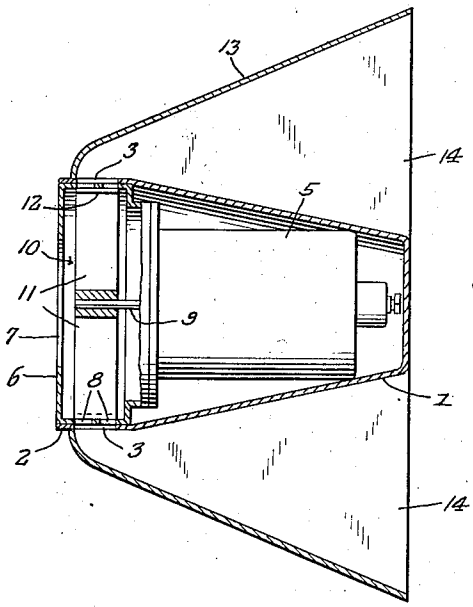



Fig. 3.

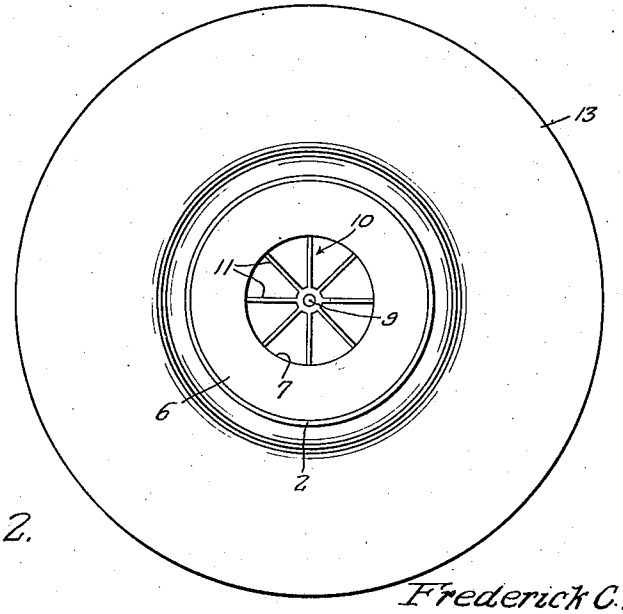



Fig. 2.

Inventor

Frederick C. Millard

By Clarence A. O'Brien

and Harvey B. Jacobson Attorneys

Patented Jan. 16, 1945 2,367,233

# UNITED STATES PATENT OFFICE

2,367,233

## SIREN

Frederick C. Millard, Pittsburgh, Pa.

Application May 14, 1942, Serial No. 442,959

1 Claim. (Cl. 177—7)

The present invention relates to new and useful improvements in sirens, and has for one of its important objects to provide, in a manner as hereinafter set forth, a device of this character which is adapted to direct the sound waves which are emitted in a path which is substantially parallel with the axis of the rotor.

Another very important object of the invention is to provide a siren of the character described comprising a novel construction and arrangement whereby the ingoing and outgoing air will be flowing in substantially the same general direction, the ingoing air entering at one end of the device, the outgoing air exhausting at the other end, thus avoiding conflict.

Other objects of the invention are to provide a siren of the aforementioned character which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in front elevation of a siren constructed in accordance with the present invention.

Figure 2 is a view in rear elevation thereof.

Figure 3 is a view in vertical longitudinal section through the device, taken substantially on the line 3—3 of Figure 1.

Figure 4 is a view in side elevation of the stator and rotor.

Figure 5 is a cross sectional view, taken substantially on the line 5—5 of Figure 4.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a substantially frusto-conical shell 1 which includes a cylindrical rear end portion 2 having circumferentially spaced openings 3 therein.

The cylindrical portion 2 of the shell 1 has mounted therein a stator 4. The stator 4 is mounted on the rear end of a suitable electric motor 5 which the shell 1 encloses. The rear end 6 of the stator 4 has formed therein a centrally located circular opening constituting an air intake 7. The periphery of the stator 4 has formed therein circumferentially spaced pairs of discharge ports 8 which communicate with the openings 3.

Fixed on the shaft 9 of the electric motor 5 for operation in the stator 4 is a rotor 10. The rotor 10 includes a plurality of radial blades 11 which terminate in angularly extending, curved free end portions 12.

A substantially frusto-conical forwardly directed horn 13 is mounted on the shell 1. Partitions 14 divide the horn 13 into a plurality of compartments, one for each of the openings 3, with which openings said compartments communicate.

It is thought that the operation of the siren will be readily apparent from a consideration of the foregoing. Briefly, the radial vanes 11 of the rotor 10 draw the air from the atmosphere into the stator 4 through the intake 7 and expel said air in the usual manner by centrifugal force through the ports 8 and the openings 3 into the compartments or cells which are defined in the horn 13 by the partitions 14. Thus, the air is exhausted and the sound waves are emitted in a forward direction from the horn 13 and in a path substantially paralleling the axis of rotation of the rotor 10.

It is believed that the many advantages of a siren constructed in accordance with the present invention will be readily understood, and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

A siren of the character described, comprising a frusto-conical rearwardly tapering horn having a central circular opening in the rear thereof, a frusto-conical forwardly tapering shell having a flat wall at its front end located flush with the front end of the horn, said shell having a cylindrical extension at its rear end fitted in and projecting rearwardly through the central rear opening of the horn, said cylindrical extension having circumferentially spaced openings therein within the horn, a rotary motor mounted in said shell and having a rearwardly projecting shaft, a stator mounted on the rear of said motor and having a central circular air intake opening at the rear thereof, said stator having a cylindrical portion fitted in the cylindrical extension of the shell and provided with circumferentially spaced pairs of discharge openings, each pair of openings being registered with an opening of said shell extension, and a rotor fixed on the motor shaft and including radial blades

corresponding in number and in spacing at their outer ends to the number and spacing of said pairs of openings, said blades terminating in angularly extending curved free end portions engaging the inner surface of said cylindrical stator portion and arranged to intermittently close and open said openings when the motor is placed in operation, and longitudinal partitions in the horn radiating from the shell and extending from front to rear of the horn, said partitions providing a plurality of compartments, one for each opening of the shell.

FREDERICK C. MILLARD.